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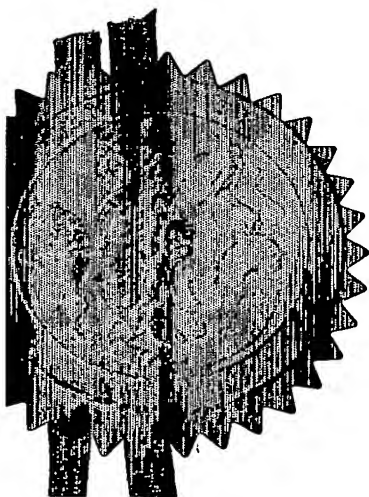
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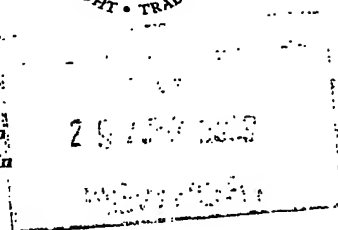
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1/77

Request for grant of a patent

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The Patent Office

Cardiff Road
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NP10 8QQ

1. Your reference

GW-G33767

2. Patent application number

(The Patent Office will fill in this part)

29 APR 1983

0309660.9

3. Full name, address and postcode of the or of each applicant (underline all surnames)

07340110002

Patents ADP number (if you know it)

Alco Hi-Tek Ltd
Mission Works
Birds Royd Lane
Brighouse, W Yorkshire
HD6 1LQ

29APR03 EB03312-2 D00346
P01/7700 0.00-0309660.9

If the applicant is a corporate body, give the country/state of its incorporation

England

4. Title of the invention

Valve Assembly

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Bailey Walsh & Co
5 York Place
Leeds
LS1 2SD

224001

Patents ADP number (if you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
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Date of filing
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or
- c) any named applicant is a corporate body.

See note (d))

Yes

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Continuation sheets of this form

Description 6

Claim(s)

Abstract

Drawing(s)

2+2

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature

Date

B. Wood

28.04.03

12. Name and daytime telephone number of person to contact in the United Kingdom

G Wood
0113 243 3824

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Valve Assembly

The invention to which this application relates is to a valve assembly and particularly to improvements in the design of a valve assembly commonly known as a double block and bleed valve.

The use of the double block and bleed valve assembly is well known and is extensively used in pipelines such as those used for oil supply. The use of double block and bleed valves is generally regarded as the best option in terms of safety and ease of maintenance. The valves typically, although not exclusively, include two trunnion mounted balls wherein the respective seals of each valve are moved onto the ball within the valve body to bring about the sealing or closure of the valve. A problem which is general to all double block and bleed valves is that the length of the same is required to comply with the International Standard ANSI B16.10. This acts to restrict the design of the valves and can be troublesome to valve manufacturers in ensuring that the valve components can be accommodated in the body and the length still achieved.

One known form of double block and bleed valve is disclosed in the applicant's patent EP1038132. This form of valve has been found to be extremely successful in practical usage, and commercially and reference to this patent illustrates the standard double block and bleed valve arrangement with the valve body formed by two parts joined together at an interface intermediate the ends of the valve body. At each end of the body are provided flanges to allow the valve to be attached to the pipeline flanges via bolts. This form of valve also has the significant advantage of only having a single joint design i.e at the interface. This is of advantage over the "double retainer" form of valves which have two pressurised joints instead of just one such that the valve in accordance with the patent is 50% safer.

Another recent development reveals a valve whereby rather than the valve body being formed from two parts joined at an interface intermediate the ends of the valve body, the valve body is a unitary member having a bore along the length thereof and the body is connected directly to the pipeline without flanges on the valve. However in this arrangement, due to the unitary nature of the valve body, the valve components are required to be inserted into the bore from one end of the body and locked therein by the insertion of a sealing ring into the end of the bore. The sealing ring is held in that position, typically by a threaded arrangement or other locking means. A problem with this arrangement is that there is a significant risk of leakage of the liquid or gas passing through the bore, through the passage defined between the sealing ring and the bore.

The aim of the present invention is to provide an improvement to the two part valve body double block and bleed valve assembly. The improvement allows additional space to be provided for the location of the valve components within the valve body while at the same time ensuring that the valve still meets the criteria of ANSI 16.10 in terms of the length of the same.

In a first aspect of the invention there is provided a double block and bleed valve assembly, said assembly comprising a valve body having a bore running along the length thereof, said bore controlled between open and closed position by two selectively operable valve arrangements positioned in line along the bore within the valve body, said body formed from first and second parts, said parts joined at an interface intermediate the ends of the valve body and wherein the valve body further includes, at at least one, but typically each, end thereof, a series of spaced ports, said ports depending inwardly from the end face into the valve body for the reception of location bolts to pass through matching respective apertures

provided on the pipeline to allow the valve to be joined with said pipeline.

Typically the ports are blind ports in that the length is shorter than the length of the valve body part in which the same is located.

Typically the valve body parts are joined at the interface to form the valve body by means of bolts passing through a series of spaced matching ports. Typically the interface lies perpendicular to the longitudinal axis of the bore passing through the valve body.

Typically the spacing between the ports at an end of the valve body is such that the same are offset with respect to the locations of the apertures which receive the bolts for attaching the valve body parts together at the interface intermediate the ends of the valve body.

Typically the bleed valve is mounted on one of the two parts of the valve body. The interface between the valve body parts is typically formed so as to minimise the risk of leakage of the liquid or gas from the bore through the interface to atmosphere. Typically the join is in accordance with that described in the applicant's patent referred to previously

In one embodiment eight ports are provided at each end to allow the valve body to be connected to the adjacent end of a pipeline, each port equally spaced around a circular path adjacent the periphery of the valve body end face.

In whichever embodiment of the invention the valve body has a length which matches the required length in accordance with ANSI 16.10.

A specific embodiment of the invention is now described with reference to the accompanying drawings; wherein

Figure 1 illustrates an elevation of a valve in accordance with one embodiment of the invention;

Figure 2 illustrates a sectional elevation of the valve of Figure 1 through the vertical centre line of Figure 1;

Figure 3 illustrated an end elevation of the valve assembly of Figure 1 and 2; and

Figure 4 illustrates a schematic illustration of the valve in accordance with the invention connected to the pipeline.

Referring to Figures 1 2 and 3 there is shown one embodiment of a double block and bleed valve assembly in accordance with the invention. The assembly comprises a valve body 2 aspects of which will be described in more detail later. The valve body includes a bore 4 which passes along the length of the body and which allows the selective flow of a liquid or gas therealong. The bore also includes two inline block valves 6,8, each operable automatically and/or via handles 10,12 respectively. The valves typically include a ball, not shown, which is trunnion mounted and each valve is moveable between an open position to allow the liquid or gas to pass therethrough, and a closed position. Also provided, in connection with the bore but mounted perpendicularly to the bore longitudinal axis 16, is a bleed valve 17. This is not described in any detail as it operates in a conventional manner.

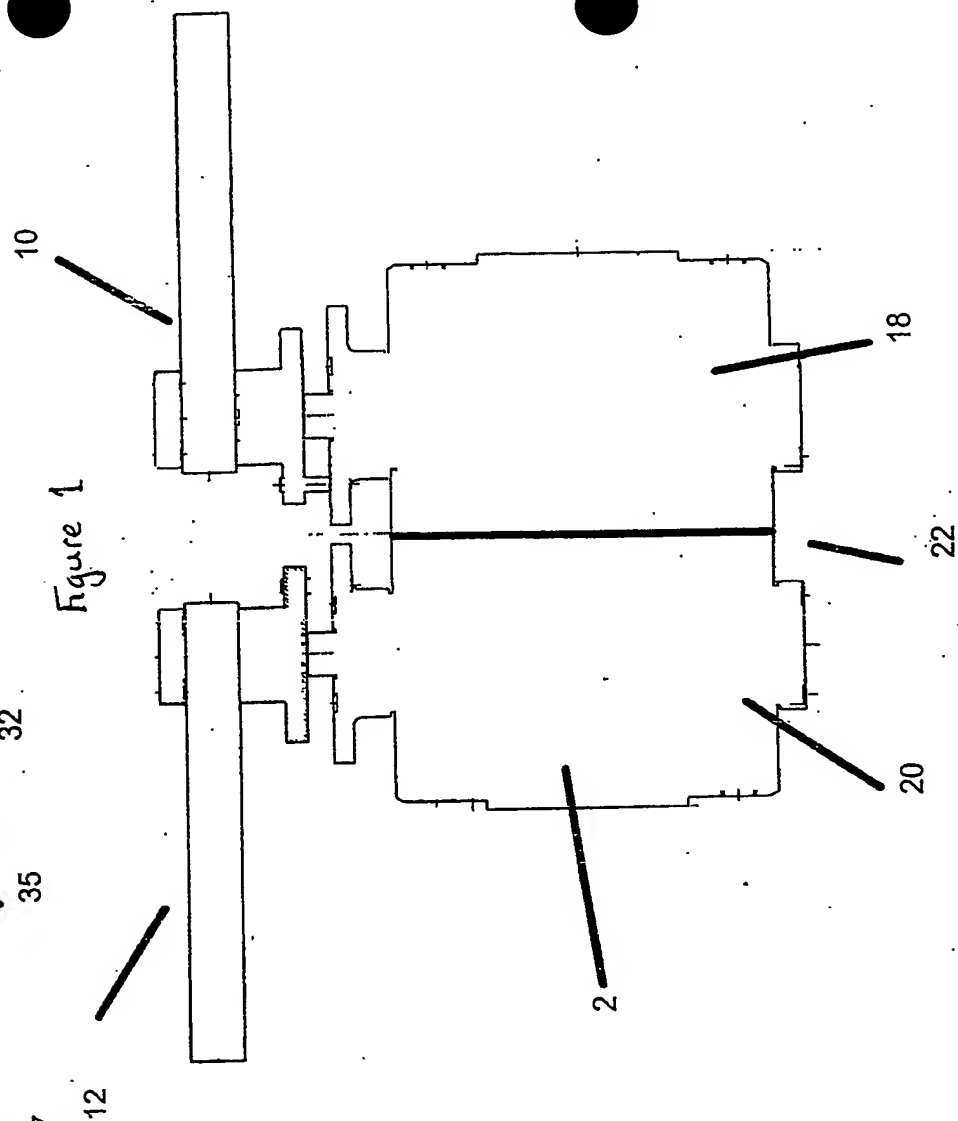
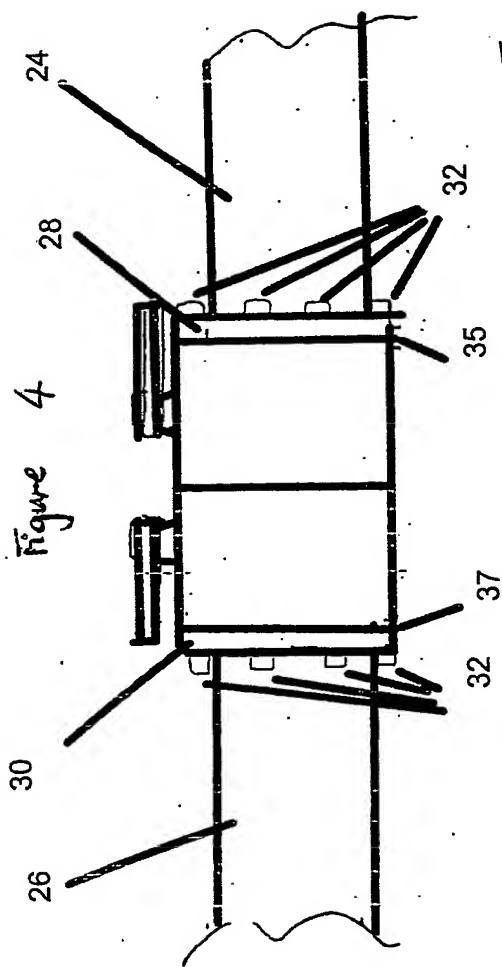
The valve body comprises two parts 18,20. The parts are joined together once the valve components have been positioned in the respective positions. The two parts are joined together at an

interface 22, which is formed so as to minimise the opportunity for leakage of the liquid or gas from the bore. The join is typically achieved via bolts located in a series of spaced apertures 23, typically four, such that the bolts pass through the apertures and across the interface 22 and engage the two parts 18,20 together in a sealed relationship. The path of one such aperture 23 is illustrated in Figure 2.

In accordance with this invention, the valve does not include separate flanges at each end for connection with the pipelines 24,26 as shown in Figure 4. Instead, the connection of the valve with the pipeline flanges 28, 30 is achieved, as illustrated in Figure 4, via a series of bolts 32. Each of the bolts 32 is located in one of a number of threaded ports 34, some of which are illustrated in Figures 2 and 3. A series of the ports 34 are provided at each end 35, 37 of the valve body and they are spaced apart around a circular path 39 adjacent the periphery of the valve body end face. The number of ports and the spacing are provided to match those apertures provided as standard on the pipeline flanges 28,30.

Thus, to secure the valve body in position with the pipeline flanges 28,30, the valve is positioned in the space provided between the flanges 28,30 and the ports 34 matched with the apertures on the flanges. With apertures and ports in line, bolts can be introduced from the pipeline ends, through the apertures in the flanges and into the ports in the valve body. The ports 34 are threaded and therefore the screwing in of the bolts serves to secure and tighten the pipeline flanges to the respective end faces of the valve body and seal the valve to the pipeline. As an alternative, headless threaded shafts can be inserted into the threaded ports in the valve body and nuts subsequently tightened onto the shafts from the pipeline ends, to secure and fasten the valve in position with the pipeline flanges.

The invention as herein described therefore provides a flangeless two part valve body which allows the advantages of assembly of a two part body, the advantages of the efficient seal between the two parts of the valve body to be combined with the direct connection of the valve body to the pipeline flanges, to be achieved in a valve which still meets the requirements of ANSI 16.10.



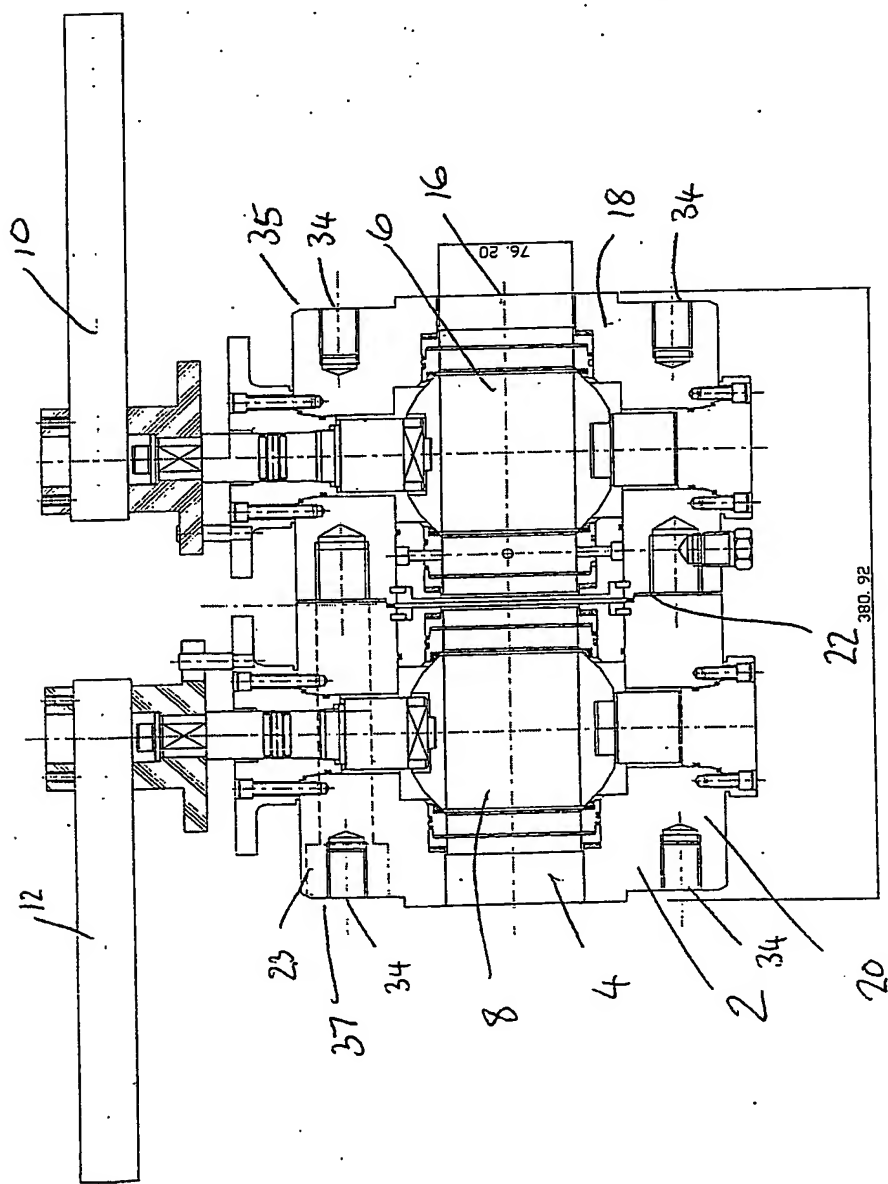


Figure 2

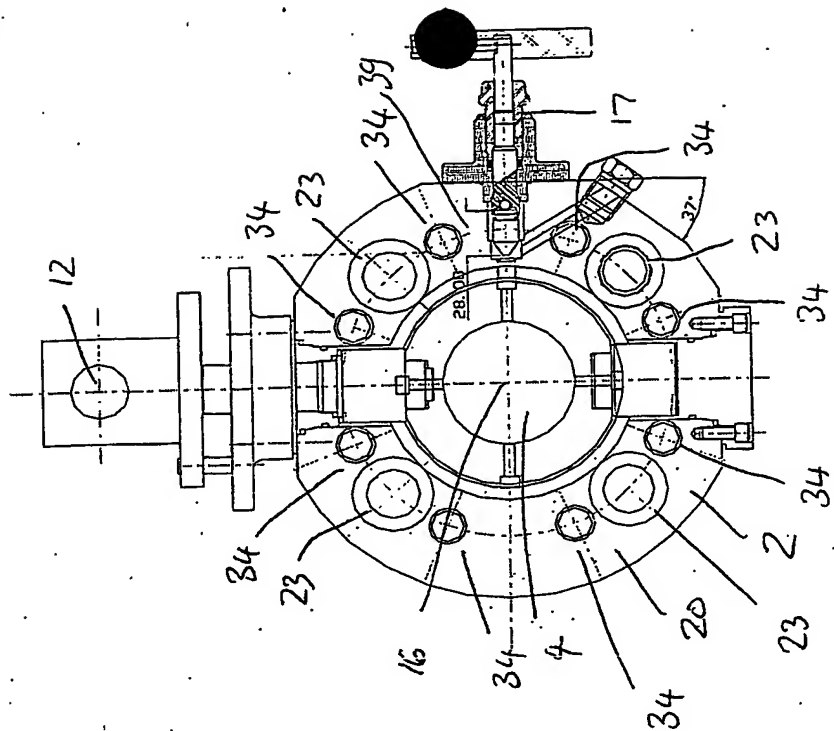
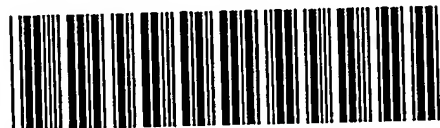


Figure 3

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